4.8 VEHICULAR AND RAIL TRANSPORTATION

The ground transportation system that could be affected by the various project alternatives includes, existing and future local, regional rail and highway facilities within the Richmond area that connects the Long Wharf with major inland rail and truck terminals. This section presents an understanding of roadway and intersection terminology, a description of the local roadway system, identified future roadway improvements in the vicinity of the proposed Project, a description of the rail system, and the regulatory setting. Assessment of vessel traffic is addressed as part of Section 4.1, Operational Safety/Risk of Accidents. As part of the Long Wharf operations, associated truck traffic would be assumed to continue if a new lease is granted. Vehicular traffic consists of trucks associated primarily with routine operation and maintenance activities. Almost all onroad import of raw stock materials or export of product is associated with Refinery operations and not a consequence of the Long Wharf. Rail traffic is also considered. The potential for impacts associated with routine operations and accident conditions during the transport of product for the project and alternatives is examined.

4.8.1 Environmental Setting

Roadway Transportation System

Terminology

Traffic is typically measured and averaged over a 24-hour period. This average daily traffic (ADT) is often based on an actual 24-hour traffic count taken during mid-week. In some cases, traffic is measured at various times during the day and extrapolated to the ADT. Seasonal variations may also be taken into account by collecting data during different months of the year.

The capacity of a roadway segment or intersection is the maximum rate of vehicular traffic flow under prevailing traffic, design, and operational conditions. Factors affecting capacity include, traffic controls, lane widths, grades, the amount of truck and bus traffic, the availability of on-street parking, parking turnover, and turn movements. Capacity is commonly defined for hourly periods of time. However, for generalized planning purposes, it is useful to define capacity as the maximum volume of traffic that a roadway may be expected to carry during a 24-hour period to maintain a level of service (LOS) E. Hourly capacities as defined in the "Highway Capacity Manual" for various facilities under ideal conditions are listed in Table 4.8-1.

Table 4.8-1
Daily Capacities for Major and Minor Arterials

Facility Geometrics	Capacity in Vechicles Per Day (LOS E)
8-lane Divided Regional Arterial	80,000
8-lane Divided Major Arterial	72,000
6-lane Divided Major Arterial	54,000
4-lane Divided Major Arterial	36,000
4-lane Undivided Major Arterial	30,000
2-lane Undivided Major Arterial	15,000
4-lane Minor Arterial	24,000
2-lane Minor Arterial	12,000

The LOS of a roadway segment or intersection is a qualitatively defined measure of prevailing traffic, design, and operational conditions. The LOS, denoted alphabetically from A to F, best to worst, is a summary evaluation of the degree of congestion, roadway design constraints, delay, accident potential, and driver discomfort experienced during a given period of time (peak hour for intersections and 24 hours for roadway segments). While LOS A is the most desirable operational condition for a roadway or intersection, LOS C is considered a benchmark for planning purposes. In heavily urbanized areas, LOS D is an accepted, though undesirable, condition for peak-hour travel, particularly on freeways. The LOS may be quantitatively calculated by a number of methods that generally compare traffic volumes with the physical and operational capacity of the roadway under study. For roadway segments and controlled intersections, the volume/capacity (V/C) ratio is indicative of the LOS. The LOS interpretation is presented in Table 4.8-2.

Table 4.8-2
LOS Interpretation

LOS	V/C Ratio
A	0 - 0.60
B	0.61 - 0.70
C	0.71 - 0.80
D	0.81 - 0.90
E	0.91 - 1.00
F	> 1.00

Existing Roadways

The Long Wharf is accessed via the Refinery. From the west, east, and south, highway access is from I-580 at the Castro Street exit. From the north, trucks along I-80 typically exit at Richmond Parkway, which leads south and becomes Castro Street. Local street access to the Refinery and Long Wharf is from Chevron Way via Castro Street, just north of I-580. Castro Street is a major arterial with two through lanes in each direction,

as well as dedicated turning lanes. Based on theclassification system included in Table 4.8-1, the road has a capacity of 30,000 ADT. Within the Refinery, internal roadways lead to the causeway running the length of the Long Wharf. Table 4.8-3 illustrates the July 1997 ADT numbers for the project area. Note that Castro Street operates at 14,534 ADT.

The traffic volumes shown in Table 4.8-3 and obtained from the city of Richmond include Long Wharf operations. For the purposes of baseline conditions, it was assumed that the existing Long Wharf is in place, but not operating. Therefore, Long Wharf operations are subtracted from these numbers to establish local traffic without Long Wharf operations.

Table 4.8-3
Traffic Volumes for I-580 at Castro Street

Northbound ADT	Southbound ADT
7,761	6,773
Source: Personal communication, A. Desai, City of Richmond Traffic Engineering, 1999.	

There is no public access to the Richmond Long Wharf. Authorized personnel access the facility through the Richmond Refinery. Only Chevron Company vehicles and other vehicles pre-authorized are allowed into the Refinery and Long Wharf areas. Vehicles accessing the Long Wharf include trucks and passenger vans. Trucks access the Refinery in support of Long Wharf and vessel operations. A Chevron shuttle van transports company and contract seafarers to and from the "marine" parking lot and/or Refinery gates to the Long Wharf. The estimated number of vehicles associated with Long Wharf operations is shown in Table 4.8-4.

If the existing traffic volume along Castro Street includes those vehicles included in Table 4.8-4 (except for the Long Wharf passenger vans), an existing "without project" volume may be determined. A reasonable worst-case scenario assumes that each vehicle would enter and leave the Refinery. Thus, the approximately 60 trips associated with truck travel would produce 120 daily trips.

Each of these trucks is estimated at two "passenger car equivalents" (PCE) and this value is doubled to 240 daily trips. Additionally, the Long Wharf requires a minimum staff of 21 operators per day. Assuming an average of 25 workers are onsite, an additional 50 trips would be generated for a total of 290 PCE. This volume is then removed from the 14,534 ADT (total of northbound and southbound trips shown in Table 4.8-3) for a total of 14,244 ADT. Based on a capacity of 30,000 ADT, excluding project operations, Castro Street would operate with a V/C ratio of 0.47 or at LOS A.

Table 4.8-4
Long Wharf Vehicle Volumes and Frequency

Vehicle Types	Trips Frequency
Trucks associated with routine operations and maintenance activities	50-60 per day
Vacuum trucks	1-2 per day
Trucks delivering vessel-engine lube oils	1-2 per month
Trucks delivering maintenance materials	1 per week
Trucks delivering ship stores in support of Chevron Shipping Company	2 per week
Wharf passenger van	20 per day
Source: Personal communication, Jason Donchin, Chevron, 1999.	

Future Roadway Improvements

Future roadway improvements include Caltrans' Richmond-San Rafael Bridge Seismic Retrofit Project. The bridge is part of I-580 spanning between Richmond in Contra Costa County on the east to Point San Quentin in Marin County on the west. The approximately 4.5-mile-long bridge is being seismically retrofitted to withstand collapse from a future severe earthquake. Seismic retrofit construction activities began in December 2000 and are expected to continue through mid-year 2006 (Caltrans Website: http://www.is.ch2m.net/rsrbridge/ September 2005).

Although there are no direct improvements planned for Castro Street, improvements for Garrard Boulevard, a parallel roadway to the east, have included widening it to a four-lane divided road. The completed improvement between Hensley Street (approximately 1 mile north of I-580) and I-580 prohibit trucks from using Garrard Boulevard and redirect trucks to Castro Street.

Existing and Future Rail Transportation

The Union Pacific Railroad runs through the project area and along the San Pablo Bay shoreline toward the city of Martinez. Union Pacific operates two tracks and will be expanding to four tracks. There are 26 passenger trains consisting of an average of 1 engine and 4 passenger cars. The 20 freight trains in the area average 3 to 4 locomotives with a maximum of 120 railcars. The trains range in speed from 0 miles per hour (mph) to between 30 and 80 mph and run 24 hours a day. Day traffic consists of mainly passenger trains while night traffic consists mainly of freight trains (personal communication, J. Fuller, Union Pacific 2005).

Chevron has no railcar access to the Long Wharf.

4.8.2 Regulatory Setting

Those portions of the affected ground transportation system available for public use are regulated by local, State, and Federal agencies. Interstate highways State routes, and bridges are governed by the Federal Highway Administration (FHWA) and Caltrans; county roads are governed by Contra Costa County; and other local street and highways are governed by local cities. In all cases, specific standards apply with respect to the planning, design, and operation of roadways and intersections. Not all governing agencies impose the same criteria (e.g., cross sections and rights-of-way for the same street may differ from jurisdiction to jurisdiction).

Rail facilities are regulated in the State by the Public Utilities Commission (PUC). Train operations are also subject to PUC guidelines; the design and operation of railroad grade crossings are subject to Federal Railroad Administration (FRA) guidelines. Numerous other Federal agencies also have regulatory authority over rail transportation.

4.8.3 Significance Criteria

Traffic impacts are considered significant if any of the following apply:

- Project traffic or construction activities must use an access road that is already at or exceeds LOS E, or brings a roadway up to LOS E;[1]
- Project traffic or construction activities would result in a substantial safety hazard to motorists, bicyclists, or pedestrians;
- Construction of the proposed Project or alternatives would restrict one or more lanes of a primary or secondary arterial during peak-hour traffic, thereby reducing its capacity and creating congestion; and/or
- Project implementation results in insufficient parking.

4.8.4 Impacts Analysis and Mitigation Measures

Impact TR-1: Operations Over 30-Year Lease Period

No increase in vehicular traffic from Long Wharf operations would occur during the lease period. Impacts are adverse, but less than significant (Class III).

[1] LOS E are operating conditions at or near capacity. All speeds are reduces to a low but relatively uniform value. Freedom to maneuver within the traffic stream is extremely difficult. Small increases in flow or minor perturbations within the traffic stream will cause breakdowns. LOS F exceeds LOS E and is defined as a flow breakdown, or when arrival flow exceeds discharge flow, such that traffic stalls and/or backs up.

All project-related traffic enters the Long Wharf through the Refinery from Castro Street. Castro Street is a major arterial with a capacity of 30,000 ADT. Project-related traffic results in a volume of 14,534 ADT, and the road that operates with a V/C ratio of 0.48 percent. Therefore, Long Wharf operations contribute to an increase the V/C ratio by about 1 percent. Continuation of the proposed Project would not change the LOS, which would remain at LOS A. Therefore, any impact would be adverse, but less than significant (Class III). Chevron has no railcar access to the Long Wharf and there would be no projected-generated rail traffic.

TR-1: No mitigation is required.

4.8.5 Impacts of Alternatives

Impact TR-2: No Project Alternative

With no new lease, the trucks that service the wharf and employee traffic trips would cease resulting in a slight beneficial impact (Class IV) During decommissioning, a small amount of construction traffic may be associated with the effort, resulting in a less than significant (Class III) impact.

Under the No Project Alternative, Chevron's lease would not be renewed and the existing Long Wharf would be subsequently decommissioned with its components abandoned in place, removed, or a combination thereof. The decommissioning of the Long Wharf would follow an Abandonment and Restoration Plan as described in Section 3.3.1, No Project Alternative.

Under the No Project Alternative, alternative means of crude oil / product transportation would need to be in place prior to decommissioning of the Long Wharf, or the operation of the Chevron Refinery would cease production, at least temporarily. It is more likely, however, that under the No Project Alternative, Chevron would pursue alternative means of traditional crude oil transportation, such as a pipeline transportation, or use of a different marine terminal. Accordingly, this EIR describes and analyzes the potential environmental impacts of these alternatives. For the purposes of this EIR, it has been assumed that the No Project Alternative would result in a decommissioning schedule that would consider implementation of one of the described transportation alternatives. Any future crude oil or product transportation alternative would be the subject of a subsequent application to the CSLC and other agencies having jurisdiction, depending on the proposed alternative.

Under this alternative, the appurtenant structures on the Long Wharf could be dismantled. The removed pipelines and pumping equipment would probably remain at the Refinery and would not be relocated over public roads. While much of the construction effort itself would be via barge, if any of the fixtures are relocated, they could be hauled offsite via heavy trucks. A construction crew of 25 workers is anticipated. While most of the removed fixtures would probably be retained at the Refinery, a reasonable worst-case scenario assumed that these items are removed

from the area. Five trucks are assumed on a daily basis and when 2-way trips and passenger car equivalents are calculated, this Long Wharf demolition could add as many as 70 ADT. The addition of 70 ADT would then bring this volume up to 14,341 ADT on Castro Street. This would raise the V/C ratio from 0.47 to 0.48 percent and the road would continue to operate at LOS A. Therefore, Long Wharf demolition would result in an adverse, but less than significant impact (Class III).

Because the Long Wharf would no longer be operational, the projected volume on Castro Street would be reduced from 14,524 ADT to 14,244 ADT, and be operational at LOS A, a slight beneficial impact (Class IV).

TR-2: No mitigation is required.

Impact TR-3: Full Throughput Via Pipeline Alternative

To operate at its current capacity, pipeline delivery, potentially from both the Central Valley and Alaska, would be augmented with foreign crude piped over from other Bay Area terminals. So that Chevron could continue operations uninterrupted, pipeline and booster pump construction would occur prior to Long Wharf abandonment. Construction would result in potentially significant (Class II) impacts along local roadways where pipeline installation would occur.

To operate at its current capacity, Chevron would need to purchase crude oil from a number of sources. Pipeline delivery, potentially from both the Central Valley and Alaska, would be augmented with foreign crude piped over from other Bay Area terminals. Furthermore, it was assumed that the existing Long Wharf would be abandoned in-place. The CSLC and Chevron would determine whether to leave piping, loading equipment, and any associated structures in place. It is reasonable to assume that these facilities would be removed, thereby allowing the Long Wharf to have other uses. So that Chevron could continue operations uninterrupted, it was assumed that pipeline and booster pump construction would occur prior to Long Wharf abandonment.

Short-Term Impacts

As previously noted, for Chevron to continue to operate, it was assumed that any new pipeline facilities would be constructed prior to Long Wharf abandonment. Pipeline and, if required, booster station construction would require both materials' deliveries and construction workers, thereby creating traffic.

Pipeline and booster pump construction is estimated to require as many as 25 workers daily. Furthermore, this analysis includes the use of 10 trucks to bring construction supplies and remove any cut material and debris, as necessary. Assuming that each haul truck is equivalent to 2 passenger cars and that each vehicle makes 2 trips (coming and going), the construction ADT volume is 90. Depending on the chosen route and the LOS on access roads, this temporary additional volume could result in significant, adverse (Class II) impacts if these vehicles are forced onto roads operating at unacceptable levels (i.e., LOS E or F).

A second potential area of temporary, significant, adverse (Class I) impacts is where the pipeline comes into proximity with any roads. Pipeline crossings may necessitate the closure of half or the entire road for 1 to 2 days. Similarly, if the line parallels or is constructed within the confines of any roads, one or more lanes may be closed. Lane closures have a significant impact because the ensuing congestion extends back to the previous intersection and reduces the traffic-carrying capacity of that intersection. Closing one lane of a two-lane road causes a reduction of more than 50 percent because not only the number of lanes is reduced by half, but the speed in the vicinity of the closure is also reduced because of (possibly) narrowed lanes, traffic control mechanisms (cones, flagmen, etc.), and the "rubbernecking" phenomenon (i.e., the tendency of motorists to want to see what is causing the impairment, thus compounding the problem).

Alternative routing of traffic during construction along a roadway segment may slightly mitigate congestion. However, the increase in traffic on nearby adjacent roadways typically causes traffic slowing and backups on those roadways and will only slightly mitigate the problems associated with roadway construction.

Long-Term Impacts

With the abandonment of the Long Wharf, traffic along Castro Street would be the same as baseline conditions. Therefore, no impacts from this alternative would occur along Castro Street. Except for occasional trips associated with its inspection, no trips are associated with pipeline operations. Furthermore, because the booster stations would in all probability be fully automated, only occasional inspection would be required and any traffic associated with this alternative would be minimal and no impacts are projected.

Mitigation Measures for TR-3:

TR-3. The following measures shall be implemented during construction:

- Schedule haul trips to avoid peak-hour traffic;
- Where possible, stockpile the debris for subsequent removal by rail or barge;
- Stagger the construction work schedule so that peak-hour traffic can be avoided; and,
- Develop a trip reduction plan or provide incentives to achieve 1.5 persons per vehicle for worker trips.

Rationale for Mitigation: These measures are standard practice in construction projects and are provided to minimize, to the extent feasible, the temporary effects of congestion caused by the addition of construction-related traffic onto the roadway system.

Impact TR-4: Conceptual Consolidation Terminal Alternative

Consolidation would result in the construction of a new terminal. The short-term traffic volumes associated with the construction of this terminal could approximate or exceed those predicted for the installation of the pipeline as discussed in Impact TR-2. In addition, a pipeline would need to be constructed to transport petroleum liquids from the new terminal to the Refinery, which would result in the short-term traffic volume impacts. Construction impacts would result in significant (Class II) impacts.

Short-Term Impacts

Consolidation would result in the construction of a new terminal. The short-term traffic volumes associated with the construction of this terminal could approximate or exceed those predicted for the installation of the pipeline as discussed above. In addition, a pipeline would need to be constructed to transport petroleum liquids from the new terminal to the Refinery, which would result in the short-term traffic volumes as described above. Depending on the actual location of the consolidation terminal, as well as the chosen pipeline route and the LOS on access roads, this temporary additional volume could result in significant, adverse (Class II) impacts if construction traffic is forced onto roadways operating at an unacceptable LOS.

In addition to this construction, Chevron may remove some of the equipment on the existing Long Wharf as it becomes unnecessary. Short-term traffic impacts from the demolition and removal of this equipment are as described above for Long Wharf demolition and would result in a Class III impact.

Long-Term Impacts

Assuming that partial consolidation of the operations of existing marine terminals in the vicinity of the Long Wharf resulted in a 50 percent decrease in Long Wharf operations, the associated traffic volume would be altered. While the number of Long Wharf workers is not expected to change, the number of service and supply trucks is estimated to be reduced to half of its current value (i.e., 25 workers and 30 trucks) and 170 PCE would be generated daily. If Castro Street operates at its baseline value of 14,244 ADT and a V/C ratio of about 0.47 percent, Long Wharf operations would bring this road up to 14,414 ADT with a resulting V/C ratio of 0.48 percent. Therefore, the Long Wharf would have little effect on the V/C ratio and the road would continue to operate at LOS A, producing a less than significant (Class III) impact. Pipeline operation would generate only minimal infrequent trips associated with inspection and maintenance and would not result in any impacts on the roadway system.

The consolidated terminal would also require workers and maintenance trucks. However, this traffic is no longer associated with the project, and any impacts would be the subject of a separate CEQA review.

Mitigation Measures for TR-4:

TR-4. The following measures shall be implemented during construction:

- Deliver the pipe to the various staging areas and remove soil during nonpeak hours;
- Keep all lanes open during peak traffic hours and schedule necessary lane closures during offpeak hours if possible. This may require construction at night when activities necessitate the closure of one lane of a two-lane road, and dictate that short segments of pipeline be completed prior to beginning the adjacent segment;
- Use signing and flagmen where construction equipment merges with traffic and give sufficient warning so cars can choose an alternate route if possible; and
- Institute public information programs so motorists can avoid congested areas. In addition to placement of signs, this includes placement of public notices in local newspapers and the distribution of fliers in the project area.

Rationale for Mitigation: These measures are standard practice in construction projects and are provided to minimize, to the extent feasible, the temporary effects of congestion caused by pipeline installation within roadways. These measures would reduce construction impacts to less than significant.

4.8.6 Cumulative Projects Impacts Analysis

Impact CUM-TR-1: Local and Regional Vehicular Traffic

Cumulative traffic in the Bay area would be expected to increase significantly over the long term. The Long Wharf's contribution to local and regional vehicular traffic would be adverse, but less than significant (Class III).

The Contra Costa County Transportation and Circulation Element notes that... "In 1990, over 1 million trips were made by Contra Costa County residents on an average weekday." Based on projections given in the Element, travel in the County is increasing at a rate of approximately 3.3 percent per year. Assuming that Castro Street has a similar increase in traffic, 30 years from now this route would carry approximately close to the design capacity of 25,000 ADT, the road would operate with a V/C ratio of about 0.84 percent, or LOS D. The Long Wharf would not be expected to add vehicles to the surface street traffic mix, as the Long Wharf associated vehicular traffic is already in the surface street count. Assuming that the Long Wharf continues to provide 290 PCE, it would raise the V/C ratio by less than 1 percent to approximately 0.84 percent and the

LOS would remain at D. Therefore, Long Wharf future operations would not raise the LOS to E nor place vehicles on a roadway operating at LOS E. As such, the project contribution represents an adverse, but less than significant impact (Class III).

CUM-TR-1: No mitigation is required.

Table 4.8-5 summarizes Vehicular and Rail Transportation impacts and mitigation measures.

Table 4.8-5
Summary of Vehicular and Rail Transportation
Impacts and Mitigation Measures

Impacts	Mitigation Measures
TR-1: Operations Over 30-Year Lease Period	**TR-1:** No mitigation required.
TR-2: No Project Alternative	**TR-2:** No mitigation required.
TR-3: Full Throughput Via Pipeline Alternative	**TR-3:** Measures reduce traffic congestion during pipeline construction.
TR-4: Conceptual Consolidation Terminal Alternative	**TR-4:** Measures reduce traffic congestion during pipeline construction.
CUM-TR-1: Local and Regional Vehicular Traffic	**CUM-TR-1:** No mitigation required.

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